

## CHAPTER FIVE:

# IMPACTS/ENVIRONMENTAL CONSEQUENCES



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## INTRODUCTION

The National Environmental Policy Act (NEPA) is the national charter for environmental protection in the United States. Title I of the law requires that federal agencies plan and carry out their activities in a manner that protects and enhances the environment. The requirements of the act are fulfilled when there is extensive public involvement in the planning and development of any proposed federal action and consideration of potential impacts to the cultural, natural, and socioeconomic environment. The impacts are analyzed through the Environmental Assessment (EA). This EA presents an overview of potential impacts that could result from each alternative. A Comprehensive Management Plan (CMP) will be developed subsequent to this study.

This chapter contains a description of the environmental consequences associated with each designation alternative concept described

in this study. The alternatives and their associated management considerations are conceptual in nature and do not include any development activities or any site specific actions. Therefore, the potential impacts are addressed based on the best available knowledge. Any future actions must be evaluated in site-specific detail in accordance with all applicable laws, mandates and policies. The discussion includes generalized measures to minimize potential impacts; however, this does not suggest that these measures would work for every site or should be applied without further study of specific sites.

Environmental impact topics selected for analysis are based on federal laws, orders, and regulations, agency policies, and issues and concerns expressed during public scoping. Impact topics allow for a standardized comparison of the potential environmental consequences each alternative could trigger. Selected impact topics considered relevant to

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this study are cultural resources, natural resources, socioeconomic environment, operations and administration, unavoidable adverse environmental effects. NEPA requires consideration of context, intensity, duration of direct, indirect, and cumulative impacts plus measures to mitigate impacts.

This chapter is organized by impact topic with alternatives as subheadings under each topic area. Following a brief description of the potential environmental consequences by topic is a brief discussion of the methodology used to determine the impacts, a discussion of the impacts of each alternative by topic area, and an outline of potential mitigation measures.

## **CULTURAL RESOURCES**

Cultural resources that may be affected by trail designation, development, and use include: archeological resources, historic resources, and cultural landscapes.

### **Potential Adverse Impacts to Cultural Resources**

Cultural resources at access sites can be degraded by trail use and development if research and protection measures are inadequate. Resources could be degraded in a number of ways including: inadequate protection of collections, artifacts, and known archeological sites; inadequate research and scholarship regarding the importance, location, and integrity of resources; through development as land uses change and resources are compromised; and inadvertent damage from unknowing trail users. Threats from trail use might relate to the inadvertent damage caused by users.

### **Methodology**

Any activities related to trail designation or use that harm important cultural resources could be considered an adverse impact. Potentially adverse impacts include movement, defacement, or deconstruction of artifacts, structural features, or through a reduction of resources,

including landscapes and viewsheds, necessary to maintain the integrity and interpret the stories of the proposed trail. Cultural resources may benefit as the public's interest in the trail, its history, and the resources grows. Greater awareness and protective measures of currently unprotected resources would provide a beneficial effect.

### **Potential Measures to Minimize Adverse Impacts on Cultural Resources**

Protection of cultural resources can most successfully be managed on a case-by-case basis, but certain measures can be recommended for all portions of the trail under all action alternatives. Archaeological, historical, and cultural landscape surveys should be conducted in order to document features on public lands and private lands along the trail. These resources should be identified and documented in coordination with the State Historic Preservation Officers (SHPOs), which may already have information on some of these resources. These actions should be taken in order to fully document resources, understand their historic importance, and control visitor use when necessary to protect resource integrity.

Trail planning and design should carefully consider the location of facilities and waysides so that no cultural resources are disturbed. No trail segments should be promoted for public use (beyond the existing patterns of travel) until resources within that segment are documented and a management plan describing appropriate treatments for artifact and site preservation is prepared. The management plan should also specify the breadth of the survey area adjacent to each side of the trail based on segment conditions. Inventories should include landscapes whenever appropriate to guarantee that contextual components of the trail are adequately protected. This decision may be made on a case-by-case basis in consultation with the SHPO or by negotiating a programmatic agreement. Efforts to inventory and protect these resources should

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be combined with existing state and District of Columbia programs, to ensure efficiency, compatibility, and eliminate redundant efforts. In some areas, the designated trail route may need to deviate from the historic route to avoid sensitive sites or navigation issues.

The trail comprehensive management plan should incorporate the expertise of local residents, historians, archaeologists, cultural anthropologists, landscape architects, and natural scientists, among others representing the federal, state and local governments, in order to capture the broadest knowledge base and most current scholarship.

#### **Alternative A**

No protection beyond what is in place would result from this alternative. Limitations on public access to private lands may result in indirect resource protection. Cultural resources could be adversely impacted by incremental development on privately-held land.

#### **Alternative B**

This alternative would provide funding from a combination of federal, state, local, and private sources to administer the trail, creating broader potential for research, cultural resource inventories, assessments, protection, and maintenance. Compliance with the National Historic Preservation Act of 1996 would be required. The trail as a whole would be considered when development actions are proposed, leaving less opportunity for piecemeal development. The NPS may provide expertise and technical assistance for cultural resource protection and interpretation. Methods for minimizing impacts to cultural resources could be included in the general management plan and implemented over time. Cultural resource studies would be conducted and used to inform the comprehensive management plan. NPS, along with other federal agencies, State Historic Preservation Officers and private interest groups, would emphasize the importance of natural and

cultural resources protection while providing for public enjoyment of the trail. Visitation and use have the potential to be higher than in Alternative A and C and therefore have a greater potential to adversely impact cultural resources. These adverse effects may be offset by a greater public awareness afforded by the larger audience this alternative could be expected to draw.

#### **Alternative C**

This alternative would have similar effects to Alternative B except funding and assistance for resource protection would be limited in time and quantity. Implementation of resource protection measures would be conducted by the state or local entities.

### **SOCIO-ECONOMIC ENVIRONMENT**

Socioeconomic factors include the effects on the regional economy, on nearby communities, and the visitors' experiences.

#### **Methodology**

Contributions to the local economy and nearby communities that are attributable to trail use and development would create a positive impact. Any activity related to trail use and development that degrades the user experience, such as the development of incompatible land uses or inappropriate visitor facilities, would be considered a negative impact. Users may be defined as residents, tourists, and other users of the proposed trail.

In this case, existing roads have capacity to move many vehicles and visitors to many access points. The waterways make the carrying capacity of the trail itself high. However, the capacity of individual resources and access points should be determined on a case-by-case basis. Use may need to be limited to protect cultural and natural resources and to protect the quality of experience. It is likely that national designation and recognition of the trail will generate increased visitation and car-

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rying capacity of the trail and access sites will need to be assessed more thoroughly.

### **Potential Measures to Minimize Adverse Impacts to User Experience**

A carrying capacity analysis should be incorporated into the trail comprehensive management plan.

#### **Alternative A**

No change in the socio-economic environment and nearby communities would result from this alternative. Increased traffic in the area may create crowded conditions. As development increases, an increased number of people would experience the area and its resources without knowing or understanding the significance. Landowners would continue to experience whatever impacts of recreational use that occur now.

#### **Alternative B**

Designation of the trail as a NHT would have a neutral to positive effect on the local economy. Any actions related to trail use and management would be spread out over time and over the geographic area of the trail, limiting the beneficial effects to one area at one time. Efforts to protect, develop, maintain, and manage the trail would create new localized spending and potential jobs and tax revenue. Expenditures for labor and materials would be minor, in the short-term, and would accrue to a few firms or individuals.

The communities along the trail may benefit from increased tourism and spending as trail use is promoted. Increased trail use would not be expected to affect the profitability of area businesses. Local landowners and business owners could benefit from their proximity or association with the trail. Property values could increase if permanent preservation methods are employed to protect open lands and landscapes. Trail designation would not affect how private property owners in the vicinity of the trail use their property. Private use and construction of privately owned piers and docks would continue to be regulated by

existing local and state laws. No additional regulations would affect the use of private land, piers or docks.

Promotion of the trail and its associated resources would result in more visitors to the trail. Users would be provided multiple itineraries and access points and would benefit from interpretive, educational, and recreational opportunities. Higher levels of use would be expected where resources are clustered or near the population centers. A carrying capacity analysis should be included in the trail comprehensive management plan. Perceived or real crowding along the trail would have an adverse effect on user experience.

#### **Alternative C**

Effects of this alternative would be similar to Alternative B.

### **Transportation and Access**

Water-based, vehicular, pedestrian, and bicycle transportation and access within the study area may be affected by trail use and development.

### **Potential Impacts on Transportation and Access**

Any trail designation or plans for use and management that creates the need for additional roadways or that burdens existing road and waterway capacity, safety, or level of service would be considered an adverse impact. Improvements to water access points, pedestrian and bicycle routes, and group transportation would be considered a positive impact.

### **Methodology**

The transportation through the area and along the trail, and access points to the trail could be adversely affected if the level of service, circulation, and accessibility are degraded. A positive effect may be measured if visitation and access to the trail increase by way of alternative transportation, bicycling, water recreation, and foot traffic.

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### **Potential Measures to Minimize Adverse Impacts to Transportation and Access**

The trail's comprehensive management plan should assess baseline traffic counts and visitation figures for the trail area and individual resources and establish a schedule for reassessing these counts. Scheduled group tours and alternative transportation could be explored in the management and interpretive plans. Appropriate facilities for watercraft users pedestrians, and bicyclists should be made available.

#### **Alternative A**

Under this alternative, transportation and access in the area would continue, primarily in response to new regional development and traffic pressures unrelated to this planning effort. No improvements would be made directly related to the trail. Increased traffic in the area may create crowded conditions.

#### **Alternative B**

Under this alternative, traffic may increase as a result of national designation and increased visitation and travel along the trail. Traffic and transportation studies should be part of the management plan for the trail. Improved access to and circulation around trail resources may be necessary if crowding occurs. Alternative modes of transportation and group tours may have a positive effect on the environment by encouraging alternatives to automobile use.

#### **Alternative C**

Effects would be similar to those under Alternative B.

## **NATURAL RESOURCES**

Natural resources which may be affected by trail use and development are wetlands, surface waters, and fish and wildlife.

### **Potential Adverse Impacts to Natural Resources**

The many rivers and creeks that run through the study area and actual segments of the proposed trail may be degraded by erosion

and sedimentation, development and land use changes (which may result in a loss of resources), over-use by recreational users, and inadvertent damage from unknowing trail users.

Increased public use of a designated trail by watercraft could cause more fuel emissions and dumping of rubbish into the waterways and air. Threats may also involve impacts on native species and the contamination of water or soil by human waste. Other adverse impacts may result from increased motorized and non-motorized watercraft use. Disturbance to fish and other fauna and the shoreline vegetation may occur at points of increased visitor access between the water and land and from the watercraft motors. Parts of the Chesapeake Bay—long popular for motorized and non-motorized recreational water craft—have suffered from such disturbance.

### **Methodology**

Any activity related to trail designation or use that reduces the survival or recovery of plant and animal species or reduces the natural function or appearance of habitat areas would be considered an adverse impact. The impacts assessment for natural resources was conducted in accordance with NPS 77: Natural Resource Management Guidelines, NPS Management Policies, Director's Order 2: Planning, and NPS 12: NPS Environmental Compliance. These documents provide general guidance for compliance with environmental laws, executive orders, and other regulations, including the National Environmental Policy Act of 1969 (NEPA), the Endangered Species Act, the Clean Air Act, the Clean Water Act, Executive Order 11988 (Floodplain Management), and Executive Order 11990 (Protection of Wetlands).

Due to the conceptual nature of the alternatives presented in this plan, more detailed impacts to natural resources will need to be assessed during more specific management planning. Natural resources, including the waterways, may benefit as the public's interest



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in the trail grows and greater emphasis is put on the significance and value of protecting natural resources. Greater awareness could also result from the public's increased understanding of the interrelationship between the natural landscape and historic events.

### **Potential Measures to Minimize Adverse Impacts on Natural Resources**

Measures to reduce impacts may range from complete avoidance of sensitive areas and rare species' habitat, to minimization of visitor access and development. Signage and interpretation should educate users on how to minimize impacts. The management entity should encourage the establishment of a stewardship and protection program for the waterways and lands along the trail. Tree removal and the addition of impervious surfaces should be avoided in sensitive areas in order to minimize the indirect effects of increased run-off and degradation of water quality. Any actions that would affect potential habitat for rare species should be avoided.

The trail comprehensive management plan should incorporate the expertise of natural resource specialists, biologists, landscape architects, and natural scientists, among others representing the federal, state and local governments.

Along with other existing programs to celebrate and conserve the Chesapeake Bay and its tributaries, efforts related to the proposed trail may help minimize adverse affects on the natural environment. Natural resource education could be incorporated into trail interpretation.

### **Alternative A**

No actions associated with the trail would be taken to further degrade or enhance the quality of wetlands, surface water resources, or habitats. Natural resource areas within the study corridors that are not already protected and monitored, could continue to degrade from unmanaged use. Access points to and from the rivers and creeks would remain

unchanged. Recreational users may cause inadvertent harm to the natural resources.

### **Alternative B**

Under this alternative, the Bay's natural resources could benefit from the trail comprehensive management plan, required by the National Trails System Act, as amended. Changing traffic patterns and increasing levels of visitor use and activity could have an adverse impact on the natural resources in the area. Management protocol for waterways, natural habitats, and public access points could be determined as part of the management plan. With appropriate management measures in place, natural resources could benefit from greater protection as visitors are directed to appropriate trail areas and restricted from accessing fragile resource areas and ecosystems. The trail comprehensive management plan could recommend measures to minimize negative impacts to the waterways, flora, and fauna, including stewardship interpretive signs, use restrictions, and monitoring. Trail partners and volunteers could provide labor and management of these efforts.

### **Alternative C**

The effects of this alternative are similar to Alternative B except natural resource protection would be incorporated into trail management plan(s) developed by the States and their partners.

## **OPERATIONS AND ADMINISTRATION**

If NPS experience following the establishment of earlier national historic trails is any guide, visitor experience, educational programs, shared resources, degree of coordination, and outreach to a diverse audience are likely to be enhanced by the selected action alternative.

### **Potential Impacts on Operations and Administration**

Any trail designation or plans for use and management that create an opportunity for

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increased agency and stakeholder coordination, shared resources, and an enhanced visitor experience would be considered a beneficial impact. However, designation, use and management that impedes agency coordination and cooperation, limits the interpretive potential and audience, and limits shared resources would be an adverse impact.

### **Methodology**

A positive effect may be measured if visitation increases within acceptable limits and the diversity of the audience is enhanced. Also, if the visitor experience, through enhanced educational opportunities and outreach, is improved by coordination between agencies and resource managers, a positive effect can be measured. Negative impacts would be evaluated if the opportunities for visitor experiences and resource protection are degraded or limited.

### **Alternative A**

Under this alternative, there would be no coordinated management entity or organized interpretation of the trail. Individual groups and resource managers would continue to operate and administer their programs and resources as they do today. No additional resources would be dedicated to interpreting or protecting the trail. Cultural and natural resources could be degraded if funding and enhanced programming are not prioritized and championed by a management entity.

### **Alternative B**

With federal designation and administration by the NPS, management entities dedicated to the interpretation, protection, and management of the trail could benefit. Individual resources and the federal, state, and local governments would benefit by sharing responsibility for the trail. By providing coordinated administration, the NPS would provide oversight. One or more trail organizations would have the responsibility of maintaining, monitoring, and promoting the trail while providing some coordination among trail stakeholders,

resource managers, and interpretive staff. Such coordination between trail organizations and the NPS creates an opportunity for the greatest levels of funding for resource protection; promotion through a broad network of agencies and resource managers; and interpretation through a complementary system of associated trail sites and a comprehensive interpretive program.

### **Alternative C**

State and local governments, could establish a partnership management model and management plan. Funding and primary support would be provided and leveraged by the state and local governments. The visitor experience would be affected by this alternative as the themes and resources would be much broader and more regional than with the National Historic Trail designation.

## **INDIAN TRUST RESOURCES**

Secretarial Order 3175 requires that any anticipated impacts of Indian Trust resources from a proposed project or action by Department of the Interior agencies be explicitly addressed in environmental documents. The federal Indian Trust responsibility is a legally enforceable obligation on the part of the United States to protect tribal lands, assets, resources, and treaty rights, and it represents a duty to carry out the mandates of federal laws with respect to American Indians. Because this trail is proposed to be entirely on the waters of the Chesapeake Bay, it would not affect any Indian Trust resources. Therefore, the impact topic of Indian Trust resources was dismissed.

## **ENVIRONMENTAL JUSTICE**

**All Actions Involving Federal Administration—Alternative B Only**  
Executive Order 12898 (*General Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*) requires all federal agencies to incorporate

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environmental justice into their missions. They are to identify and address the disproportionately high and/or adverse human health or environmental effects of their programs and policies on minorities and low-income populations and communities. Because the Captain John Smith Chesapeake NHT is proposed to be entirely on the waters of the Chesapeake Bay, it would not have any direct or indirect adverse effects on human health or the environment regarding any minority or low-income population or communities as defined in the Environmental Protection Agency's *Draft Environmental Justice Guidance* (July 1996).

Although the story that the proposed trail commemorates is primarily about white Europeans, one very core reality concerns the indigenous Native Americans present in 1607-1609. If the trail is designated as a national trail and comes under federal administration, this Executive Order must be considered during preparation of the trail management plan or other action plans to ensure compliance. The trail does not directly or indirectly affect vulnerable human communities.

## **UNAVOIDABLE ADVERSE ENVIRONMENTAL EFFECTS**

### **Alternative A**

Trail water quality and access points and associated cultural and natural resources would remain susceptible to natural deterioration, inadvertent human damage, and vandalism. It is likely that some important resources would be lost during natural processes or through development. Increasing piecemeal development in proximity to the route could contribute to the loss of trail resources.

### **Alternatives B and C**

With proper planning and management, few long-term adverse impacts to trail resources would be anticipated from any of the action alternatives. The physical activities with potential for adverse effect would be installing route markers and interpretive exhibits in areas

of public use; limited road construction and reconstruction for access areas; and facility development related to trail activities. These activities would have a long-term visual impact. With appropriate siting, these effects could be minimized, but not eliminated. Construction activity could result in short-term disturbance of wildlife near construction sites, but construction should be located so that there would be no permanent disturbance. Visitor use could result in temporary displacement of species when people are present. The extent of impacts to vegetation and wildlife would have to be determined on a site-specific basis and cannot be predicted at this time. However, none are foreseen.

## **SHORT-TERM USES AND LONG-TERM PRODUCTIVITY**

NPS is required to describe actions in terms of the NEPA objective to maintain and enhance the long-term productivity of the environment. The feasibility study alternatives include elements that would either diminish or enhance the long-term productivity of the environment.

### **Alternative A**

Negligent or insensitive uses or activities along the trail could damage or destroy trail segments and associated resources and negatively affect the long-term ability to interpret and protect the trail.

### **Alternatives B and C**

In the long-term, trail segments and associated cultural and natural resources would be protected. Any short-term use would contribute to this long-term effect. Recognition and interpretation of the trail would have a negligible effect on the long-term productivity of adjacent land. Short-term actions and uses that enhance the national recognition and understanding of the trail and associated resources will create greater opportunities for the protection of resources of the Chesapeake Bay, tributaries and other resources surrounding the trail.



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## **IRREVERSIBLE AND IRRETRIEVABLE COMMITMENT OF RESOURCES**

An irreversible commitment of resources is one that cannot be changed once it occurs. An irretrievable commitment of resources means that the resources cannot be recovered or reused.

### **Alternative A**

There would be no commitment of resources under the no action alternative.

### **Alternatives B and C**

The use of non-renewable energy resources, such as fuel to power construction equipment to build new facilities, would be an irreversible commitment of resources under any alternative. Although energy supplies are expected to be sufficient, once committed these resources are irretrievable. Under any of these action alternatives, limited amounts of non-renewable resources would be used for construction project--trail access points, parking and pull-off sites, visitor facilities, and rest-rooms; development and placement of wayside exhibits, directional signs, and other interpretive materials. These non-renewable resources would include fossil fuel energy and materials. Disturbance and/or destruction of non-renewable resources such as archeological resources is also potentially part of all action alternatives. Even with mitigating measures, it is possible that some of archeological information could occur at trail access points. Some erosion could occur along the trail path because of access development and use, which could result in irreversible loss of portions of these resources.

The funding, renewable resources, and staff time used to construct, operate, and maintain the trail and visitor facilities would be lost for other activities. This would constitute an irretrievable commitment of resources.

Although proposed developments could be removed, these areas could not be restored to pre-development conditions.

Creation and expansion of interpretive programming for the Captain John Smith Chesapeake National Historic Trail would also constitute an irreversible and irretrievable commitment of resources because of the use of funding, park staff, and renewable and limited non-renewable energy sources and materials. Once interpretive programs and partnerships are in place, it would be difficult to withdraw resources and support from them.

If memoranda of understanding, easements, or transfer of development rights are not implemented, adjacent lands owned by private property owners could be developed and would constitute an irretrievable loss of the acreage and cultural resources. The NPS (as trailwide administrator), trail management entities, and local jurisdictions would cooperate with adjacent landowners and the local jurisdictions to protect the trail setting and cultural resources from possible incompatible development and encroachment. This would constitute an irretrievable commitment of resources because of the level of long-term support and commitment of park staff and resources that would be required to address adjacent lands issues.

### **Impairment**

The study team finds that there would be no substantial impairment to park and/or refuge resources caused by the proposed creation of the Captain John Smith Chesapeake National Historic Trail.